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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,919	12/03/2001	Jerome Maillot	1252.1056	4265

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EXAMINER

CHEN, PO WEI

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/998,919

Applicant(s)

MAILLOT ET AL.

Examiner

Po-Wei (Dennis) Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 22-25 and 28-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 22-25 and 28-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

In response to an Amendment received on May 06, 2004. This action is non-final.

Claims 1-19, 22-25 and 28-39 are pending in this application. Claims 1, 22, 28, 31, 33-39 are independent claims.

The present title of the invention is "Dynamically Adjusted Brush For Direct Paint Systems on Parameterized Multi-Dimensional Surfaces".

The Group Art Unit of the Examiner case is now 2676. Please use the proper Art Unit number to help us serve you better.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 9, 11-12, 14, 28, 31, 34-35 and 38-39 are rejected under 35

U.S.C. 102(e) as being anticipated by Hanrahan et al. ("Direct WYSIWYG Painting and Texturing on 3D Shapes", Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223).

3. Regarding claim 1, Hanrahan discloses a method for Direct WYSIWYG Painting on 3D shapes comprising:

Selecting an area of a displayed parametric object living in three dimensional or higher space; painting a brush directly onto a surface of the area of the displayed parametric object in the three dimensional or higher space (pp 4 of page 216).

4. Regarding claim 2, Hanrahan discloses a method for Direct WYSIWYG Painting on 3D shapes comprising:

The painting is performed view independently (pp 4 of page 216 and pp 2-3 of page 219; it is noted that painting can be done on any viewing angle).

5. Regarding claim 3, Hanrahan discloses a method for Direct WYSIWYG Painting on 3D shapes comprising:

The painting first aligns the brush to a normal vector of the surface (pp 4 of page 219; it is noted that the tangent space brush is applied in alignment with the normal vector of the surface).

6. Regarding claim 4, Hanrahan discloses a method for Direct WYSIWYG Painting on 3D shapes comprising:

The painting is performed without first painting the brush on a two dimensional texture space corresponding to the object (pp 4 of page 216; painting is done directly on the 3D shape object).

7. Regarding claims 9 and 11-12, Hanrahan discloses a method for Direct WYSIWYG Painting on 3D shapes comprising:

Computing a tangent plane by computing a normal vector at an intersection point where the brush is applied; and projecting the brush on the surface of the selected area using the tangent plane; the brush is two dimensional; the brush is three dimensional (pp 6 of page 219).

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8. Regarding claim 14, Hanrahan discloses a method for Direct WYSIWYG

Painting on 3D shapes comprising:

An intensity of portions of a brush painting varies based on a normal vector of respective portions of the surface (pp 5 of page 220 and pp 1 of page 221).

9. Regarding claim 28, as statements presented above, with respect to claims 1 and 9 above are incorporated herein.

10. Regarding claim 31, Hanrahan discloses a method for Direct WYSIWYG

Painting on 3D shapes comprising:

Defining a series of points on the parameterized object representing a stroke; positioning and orienting a brush stamp for each point in the series of points in a view independent manner (pp 2-4 of page 218);

Directly painting the stroke into an object texture as a collection of texture modifications using the brush stamp for each point on the parameterized object in the three dimensional or higher space (pp 4 of page 216 and pp 2-3 of page 220).

11. Regarding claims 34-35 and 38-39, statements presented above, with respect to claim 1 are incorporated herein.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 5-7, 13, 15-16, 17-19, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanrahan et al. ("Direct WYSIWYG Painting and Texturing on 3D

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Shapes", Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223) as applied to claims 1 and 28 above, and further in view of Daniels et al. (US 6,268,865; refer to as Daniels herein).

14. Regarding claims 5-6, Hanrahan does not disclose converting a selected two dimensional screen coordinate into a three dimensional world coordinate; identifying an intersection point by intersecting a vector comprising the three dimensional world coordinate and a viewing direction, and the object. Daniels discloses a method for three-dimensional painting utilizing the process (lines 30-35 of column 12 and 28-35 of column 13 and Fig. 9).

It would have been obvious to one of ordinary skill in the art to utilize the method of determining painting position of Daniels to provide a smooth process of applying paint on 3D surface such as one disclosed by Hanrahan.

15. Regarding claim 7, Hanrahan discloses a method for Direct WYSIWYG Painting on 3D shapes comprising:

Computing a tangent plane by computing a normal vector at the intersection point; and projecting the brush on the three dimensional surface of the selected area using the tangent plane (pp 6 of page 219).

16. Regarding claims 13 and 15-16, Hanrahan does not disclose the brush is cylindrical with a defined depth; the painting stops beyond a portion of the surface with a normal vector which varies more than a predetermined angle from an intersection point normal and the predetermined angle is 90 degrees. Daniels discloses a method for three-dimensional painting utilizing the process (lines 53-62 of column 2, lines 16-19 of column 3 and lines 46-59 of column 15 and Fig. 15). It is noted that the painting

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corresponds to stroke width. And the width will be limited to a maximum size when normal vector is normal (or 90 degrees) to P, the view point intersection on the surface.

It would have been obvious to one of ordinary skill in the art to utilize the brush and the painting method of Daniels to provide a smooth process of applying paint on 3D surface such as one disclosed by Hanrahan.

17. Regarding claims 17-19, Hanrahan does not disclose the painting stops beyond a portion of the surface when a distance from the brush to the portion of the surface is greater than a predetermined threshold; before the painting, the brush is rotated in a brush stroke direction; before the painting, a brush resolution for the brush is determined and applied. Daniels discloses a method for three-dimensional painting utilizing the process (lines 33-43 of column 8, lines 5-9 of column 9 and Fig. 4, and lines 34-41 of column 20). It is noted that the brush width corresponds to painting and it stops when the normal distance is greater than certain threshold depending on the size of brush chose.

It would have been obvious to one of ordinary skill in the art to utilize the brush and the painting method of Daniels to provide a smooth process of applying paint on 3D surface such as one disclosed by Hanrahan.

18. Regarding claim 29, Hanrahan does not disclose determining a normal to the surface at the point; determining a radius and a depth of the brush in a plane tangent to the surface at the point; bringing the brush and the surface into coincidence along the normal; determining portions of the object intersected by the brush using the depth and the radius; applying paint to corresponding portions of object texture in texture space; and applying texture to the object. Daniels discloses a method for three-dimensional painting utilizing the process:

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Determining a normal to the surface at the point (lines 43-45 of column 15 and Fig. 15);

Determining a radius and a depth of the brush in a plane tangent to the surface at the point (lines 46-59 of column 15 and lines 43-67 of column 20 and lines 1-12 of column 21 and Fig. 15). While claim recites radius, by determining the width of the brush, will also determines the radius of the brush. The depth is determined depending on the focus and amount of emphasis given to the point;

Bringing the brush and the surface into coincidence along the normal (lines 28-36 of column 13 and lines 46-59 of column 15 and Fig. 9 and 15). It is noted the brush width data is being determined and mapped on the surface normal point;

Determining portions of the object intersected by the brush using the depth and the radius (lines 46-59 of column 15 and lines 43-67 of column 20 and lines 1-12 of column 21 and Fig. 15). The width of the brush corresponds to the portion of the object intersected by the brush and depending on the focus and amount of emphasis, different width is computed;

Applying paint to corresponding portions of object texture in texture space (lines 19-29 of column 12 and lines 28-36 of column 13). The brush data is being mapped on to the object surface which contains surface map information that corresponds to texture; While Daniels does not disclose applying the texture to the object in the invention, the method is disclosed in the background information (lines 55-62 of column 1).

It would have been obvious to one of ordinary skill in the art to utilize the brush and the painting method of Daniels to provide a smooth process of applying paint on 3D surface such as one disclosed by Hanrahan.

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19. Regarding claim 32, Hanrahan does not disclose a compiling images produced by the painting into a movie. Daniels discloses a method for three-dimensional painting utilizing the process lines 1-2 of abstract).

20. It would have been obvious to one of ordinary skill in the art to utilize the movie image process of Daniels to provide the advantage of utilizing 3D painting method disclose by Hanrahan to provide a better image process in movie production.

21. Claims 22-24, 33 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanrahan et al. ("Direct WYSIWYG Painting and Texturing on 3D Shapes", Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223) in view of Daniels et al. (US 6,268,865; refer to as Daniels herein).

22. Regarding claims 22-24, statements presented above with respect to claim 1 are incorporated herein. Hanrahan does not disclose reverse projecting texture from a surface of the selected area onto a temporary brush, processing the temporary brush using a selected process; the selected process uses a particular filter; the selected process uses a particular brush. Daniels discloses a method for three-dimensional painting utilizing the process (lines 21-24 of column 6 and lines 19-43 of column 12 and Fig. 9; the saved stroke data corresponds to temporary brush which is mapped to the surface of the selected view that contains surface map information that corresponds to texture).

It would have been obvious to one of ordinary skill in the art to utilize the brush and the painting method of Daniels to provide a smooth process of applying paint on 3D surface such as one disclosed by Hanrahan.

23. Regarding claim 33, statements presented above, with respect to claims 1 and 32 are incorporated herein.

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24. Regarding claim 37, statements presented above, with respect to claims 1 and 19 are incorporated herein.

25. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanrahan et al. ("Direct WYSIWYG Painting and Texturing on 3D Shapes", Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223) as applied to claim 1 above, and further in view of Morioka et al. (US 6,239,809; refer to as Morioka herein).

26. Regarding claims 8 and 10, Hanrahan does not disclose interpolated normal vector. However, this is known in the art taught by Morioka. Morioka teaches a image processing comprising a interpolated normal vector (lines 28-31 of column 12). It would have been obvious to one of ordinary skill in the art at time of invention to utilize the teaching of Morioka to provide a more efficient image processing (lines 17-21 of column 2, Morioka). Also, Hanrahan and Morioka are directed to image processing in three-dimensional space.

27. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanrahan et al. ("Direct WYSIWYG Painting and Texturing on 3D Shapes", Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223) and Daniels et al. (US 6,268,865; refer to as Daniels herein), as applied to claim 28 above, and further in view of Morioka et al. (US 6,239,809; refer to as Morioka herein).

28. Regarding claim 30, statements presented above, with respect to claim 8 are incorporated herein.

29. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanrahan et al. ("Direct WYSIWYG Painting and Texturing on 3D Shapes", Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223) and Daniels et al. (US 6,268,865; refer to as

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Daniels herein), as applied to claim 22 above, and further in view of Bossut (US 6,239,807).

30. Regarding claim 25, the combination of Hanrahan and Daniels does not disclose the particular brush is selected based on a determination of an appropriate brush resolution. However, this is known in the art taught by Bossut. Bossut teaches a method for multi-resolution texture mapping that “offers the user the capability of touching up coarse details at one resolution, and fine details at a magnified resolution” (lines 49-60 of column 6). It would have been obvious to one of ordinary skill in the art at time of invention to utilize the teaching of Bossut to provide the advantage of allowing user to choose the appropriate resolution for painting the image.

31. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanrahan et al. (“Direct WYSIWYG Painting and Texturing on 3D Shapes”, Computer Graphics, Vol. 24, No. 4, August 1990, pp. 215-223), and further in view of Daniels et al. (US 6,268,865; refer to as Daniels herein) and Morioka et al. (US 6,239,809; refer to as Morioka herein).

32. Regarding claim 36, as statements presented above, with respect to claims 1-8, 14, 15 and 17 are incorporated herein.

Response to Arguments

33. Applicant's arguments with respect to claims 1-19, 22-25 and 28-39 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C Bella can be reached on (703) 308-6829. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen
Examiner
Art Unit 2676

Po-Wei (Dennis) Chen
August 9, 2004



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600